

PRINTERS

FAQ

Q Why do inkjet printers have a higher resolution horizontally than they do vertically?

A An inkjet's heads fire ink droplets at the paper through hundreds of microscopic nozzles that are packed tightly together. The distance between these nozzles gives the print head its own resolution, like an LCD screen's pixels.

The most advanced inkjets have print heads with a native resolution of 2,400 nozzles per inch, so a stationary head fires ink dots at the page at this resolution. However, because inkjet heads move from side to side to cover the whole page width, it's possible to revisit the same area and each time spray ink from a fractionally different position.

The printer heads' transport motors are very accurate, so it's normally possible to make four passes, creating an effective horizontal resolution four times that of the print head. However, a printer's paper-feed mechanisms aren't so precise, and the same technique can't be used to increase the vertical resolution.

Simon Handby

Printers and audio expert

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HP DeskJet 6940

★★★★★

£81 inc VAT



HP's DeskJet 6940 looks similar to the DeskJet 5940 in our 'Also consider...' list on page 26. Both printers have an expensive-looking brushed metal trim, but the 6940 comes with a standard Ethernet interface. If you have a home or small office network, you can use the supplied cable to connect and share it.

Like other HP network printers we've reviewed, the DeskJet 6940 is very easy to set up. The printer leased an IP address on our Labs network, and HP's install software detected and installed it without any trouble. On other networks that don't use DHCP to allocate IP addresses, the installer can still detect the printer and will help you assign it an address.

This printer comes with HP's Photosmart Premier suite of photo-management and editing products. Useful software is always welcome when it comes free with a product, but the setup program offers a choice of only two installations, which take up 200MB or 450MB of disk space. Installing the Full option on our test notebook took around 10 minutes. We'd rather HP added a Custom option to its installer.

The 6940 is a formidable plain-paper printer. It reached high speeds on our mono print tests, particularly when printing black text. Our letter test printed at a respectable 5.6 pages per minute (ppm), but the 6940 breezed through our Draft Speed faster than any other inkjet we've reviewed. Printing in colour, the DeskJet 6940 managed a sound performance on our punishing Normal Speed test. Text was black and tidy, while colour graphics looked lively and solid.



This printer isn't aimed at photographers, but the speed and quality of our tests using its standard inks was fine for occasional use. We repeated our photo tests using an optional photo cartridge to print with six inks, producing better, but still slightly grainy, results.

This is the first DeskJet we've seen that comes with HP's high-yield black and colour ink cartridges as standard. These are comparatively cheap, but including them with the printer means that it could be some time before you'd need to buy more ink. The black cartridge is rated for 800 pages, and the colour for 450.

Aside from the software installation, the 6940 is a fuss-free and robust printer. Its 5,000 page-per-month duty cycle makes it suitable for a small office or a conscientious home worker. Best of all, the DeskJet 6940 has the lowest running costs we've seen from an inkjet, making it a Best Buy.

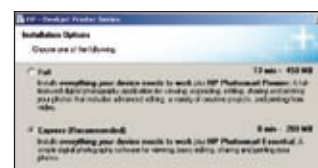
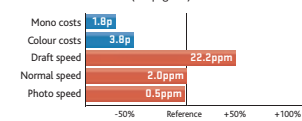
Simon Handby

SUMMARY

- ✓ Very good value
- ✓ Fast
- ✓ Classy metal finish

INKJET PRINTER Four-colour inkjet, 4,800x1,200dpi maximum resolution, USB Hi-Speed, 10/100 Ethernet and PictBridge USB interfaces **PART CODE** C8970B **SUPPLIER** www.misco.co.uk **DETAILS** www.hp.co.uk

PERFORMANCE (see page 60)



▲ The software installation offers just Full or Express options

Also consider...

SAMSUNG ML-2250

★★★★★

£95 inc VAT



Samsung's ML-2250 is iPod-white,

which makes a pleasant change from the drab beige favoured by most printer manufacturers. It takes a single 5,000-page-rated consumable, which is enough for 10 reams of paper; each sheet costing 1.33p to print. It produced text at a rapid 20.3ppm in our Draft speed and Normal speed tests.

This printer has 16MB of memory and a 250-sheet input cassette, so it's well specified for the price. It has excellent print quality and is great value.



LASER PRINTER Mono laser, 1,200dpi, 20ppm maximum speed, USB Hi-Speed interface **PART CODE** ML-2250/XEU **SUPPLIER** www.savastore.com **DETAILS** www.samsung.co.uk

✓ Low running costs ✗ Slow from standby **FULL REVIEW** Aug 2005

KYOCERA MITA FS-1920n

★★★★★

£474 inc VAT



This compact workgroup laser prints for less than half a penny a page, so it could save you a fortune over its 300,000-page lifetime. Toner cartridges are the only consumable, and each lasts for 15,000 pages. The FS-1920n is simple to maintain, but has plenty of scope for upgrades. It can be expanded to a paper capacity of 2,000 sheets, fitted with an automatic duplexer or a 1,000-page output sorter. This is a capable all-rounder with decent print quality, and its low ownership costs make it a winner.



MONO LASER PRINTER Mono laser, 1,800x600dpi, 28ppm maximum speed, 10/100 Ethernet, USB and parallel interfaces **PART CODE** FS-1920N **SUPPLIER** www.savastore.com **DETAILS** www.kyoceramita.co.uk

✓ Hugely upgradable ✗ Clunky installer **FULL REVIEW** Jan 2006

LEXMARK T640n

★★★

£680 inc VAT

Lexmark's T640n is a powerful and robust network printer, designed for use in workgroups or small departments. Its mono laser print engine is rated at 33 pages per minute (ppm), and it can print at 1,200 dots per inch (dpi) resolution. To meet the demands of high-volume printing, this printer has a duty cycle of up to 200,000 pages per month.

As you'd expect from a workgroup printer, the T640n supports a wide range of protocols and print languages. Drivers are available for Windows and Mac clients, but also for various Novell and Linux versions. Moreover, the front USB port allows users to print PDF, JPG or TIFF files directly from a USB storage device.

Walk-up printing could prove very useful for office guests, who can use it to make prints without connecting to the network. It could also come in handy for printing confidential files, removing the need to hot-foot it to the printer before any sensitive documents gather incriminatingly in the output tray. We found the feature simple to use, but could only get Adobe PDF files to print.

Network printers can be difficult to install, but the T640n is fairly straightforward. By default it uses DHCP to lease an IP address and, when first switched on, it prints a report with details of its network configuration. Lexmark's install program can add both PCL and PostScript drivers in one operation, but if you forget to select the detected network printer the T640n will be configured on the LPT1 port.

The T640n performed quickly in our print tests, but its speed wasn't quite a match for the best mono workgroup lasers tested in *Labs*,



Shopper January 2006. It was fastest when printing via the PCL driver, but some dark graphics in our Normal Speed test were surrounded by a slight smudging of toner. It printed the first copy of our formal letter in just seven seconds, and took only 18 seconds to do so from its power-saving mode.

Our tests were a little slower when repeated using the PostScript driver. Text quality remained very high, but although graphics printed with no smudging, they were too dark at the default setting. Printing at the laser's maximum 1,200dpi resolution halved the engine's speed.

We'd expect a workgroup laser at this price to accept a whole ream of 500 pages, but the T640n's 250-page cassette means it will require more frequent restocking than many of its competitors. The supplied 6,000-page print cartridge is a little stingy for this class of printer, and its penny-a-page running costs aren't especially low either. For around £90 less you can buy Dell's similarly specified M5200n, which is better in all these respects.

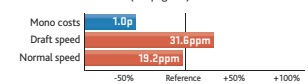
Simon Handby

SUMMARY

- ✓ High duty cycle
- ✗ High running costs
- ✗ Expensive

LASER PRINTER 1,200dpi resolution, 33ppm maximum speed, USB Hi-Speed, parallel and 10/100 Ethernet interfaces
PART CODE 0020G0151
SUPPLIER www.dabs.com
DETAILS www.lexmark.co.uk

PERFORMANCE (see page 60)



BYTE SIZE



MY MEMORY USB Bluetooth Adaptor

★★★★★

£9 inc VAT



USB Bluetooth dongles don't come much cheaper than this

version 1.2 adaptor – it's the least expensive Bluetooth device we've reviewed. It feels well made and works fine with Windows XP's integrated Bluetooth stack, and it comes with a disc containing the IVT BlueSoleil suite and drivers for older versions of Windows.

This slender adaptor doesn't block adjacent USB ports, but it is a little longer than other dongles we've seen. Blue LED devotees will be disappointed by the adaptor's green status light, but we were impressed with its ability to find Bluetooth devices through a concrete floor and maintain connections to a mobile phone at ranges over 10 metres.

This is an inexpensive way to add Bluetooth to your PC.

Simon Handby

SUPPLIER My Memory 01534 789922
DETAILS www.mymemory.co.uk

EPSON AcuLaser C1100

★★★★★

£214 inc VAT

BEST BUY Epson's C1100 is reasonably large for a four-pass colour laser, and it's more tricky than many to set up. In our tests it came commendably close to Epson's claimed speeds, but the most welcome discovery was its superb all-round print quality. This is an excellent, inexpensive printer with reasonable running costs.



COLOUR LASER PRINTER Colour laser, 600dpi, 25ppm mono/5ppm colour maximum speed, USB Hi-Speed interface PART CODE C11C567001 SUPPLIER www.dabs.com DETAILS www.epson.co.uk ✓ Excellent print quality ✗ Fiddly to set up FULL REVIEW Apr 2005

EPSON AcuLaser CX11NF

★★★★★

£594 inc VAT

BEST BUY Multifunction peripherals based on colour laser printers aren't getting any smaller, but they're finally affordable. This hulking Epson is the best example we've tested. It has built-in fax capability, a good scanner and great print quality. It's easy to install and use, but colour prints could be cheaper.



COLOUR LASER MFP 600dpi print resolution, 25ppm mono/5ppm colour maximum speed, 600x600dpi scan resolution, USB Hi-Speed and 10/100 Ethernet interfaces PART CODE C11C588081DA SUPPLIER www.dabs.com DETAILS www.epson.co.uk ✓ Easy network setup ✗ Limited paper handling FULL REVIEW Oct 2005

HP Photosmart 8250

★★★★★

£135 inc VAT

BEST BUY The Photosmart 8250 produces excellent print quality on plain or coated paper. It's one of the fastest photo printers we've tested, but it also dashed off our Draft speed test at 18.5ppm. It has easy-to-use direct photo-printing features, and low running costs make it a superb all-rounder.



INKJET PRINTER Six-colour inkjet, 4,800x1,200dpi maximum resolution, USB Hi-Speed and PictBridge USB interfaces PART CODE Q3470B SUPPLIER www.dabs.com DETAILS www.hp.co.uk ✓ Fast, high-quality prints ✗ Occasional untidy paper output FULL REVIEW Dec 2005

LEXMARK X8350

★★★
£181 inc VAT

Multifunction peripherals (MFPs) usually tend towards one of two types. Those aimed at photographers typically have memory card slots and a display screen that can be used for direct printing, while those designed for use in an office concentrate on copy and fax performance.

Lexmark's X8350 is an inkjet MFP that, though primarily aimed at office users, aims to please both camps. It has a 50-sheet Automatic Document Feeder (ADF), suitable for making multipage copies and faxes, and a colour screen. A range of memory card slots on the front panel allow it to make direct photo prints from common formats.

The X8350 is the model above Lexmark's X7170 MFP, reviewed in *Labs, Shopper* March 2006. The X7170 seemed flimsy in some respects, but the X8350 feels altogether better made.

Although its scanner hinges won't let the lid close flat on over-size original documents, they feel tougher, and the lid itself isn't as easily flexed. It produced good-quality scans, though not especially quickly.

This MFP's ADF is easy to load with originals for fax or copying, but multipage copies are printed in the reverse page order. The X8350 took six minutes and 25 seconds to copy a 10-page document in black only, which isn't particularly fast, and the results were far too pale. Single-page copies were also slow at 38.5 seconds in mono and 55.5 seconds in colour, but they were more accurately exposed.



The X8350 uses the same family of ink cartridges as most of the current Lexmark inkjet range. The cartridges come with their own print heads, and we've criticised the print quality of several products that use them. However, although the X8350's plain paper prints aren't as good as those from competitors such as HP's OfficeJet 6210, plain paper print quality did seem improved over the X7170.

The X8350 was fairly quick across all our print tests. We ran our photographic tests using the default four-ink setup, although an optional six-ink photo cartridge is also available. With the standard setup, photos were grainy and a little soft, but colours were very realistic.

The X8350 is quite capable and easy to use. It produces acceptable results on plain paper and clear, accurate scans. However, it isn't a great photo printer, and the inclusion of memory slots and a high-quality colour screen make it far too expensive.

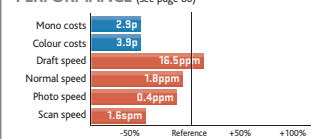
Simon Handby

SUMMARY

- ✓ Swift printing
- ✓ Good scans
- ✗ Expensive to buy
- ✗ Mono printing could be cheaper
- ✗ Unimpressive photo prints

MULTIFUNCTION PERIPHERAL
4,800x1,200dpi print resolution,
1,200x2,400dpi scan resolution, USB
Hi-Speed and PictBridge USB interfaces
PART CODE 0021M0002
SUPPLIER www.dabs.com
DETAILS www.lexmark.co.uk

PERFORMANCE (see page 60)



CHOOSING A... Laser Printer

Follow the steps to find your ideal specs

RESOLUTION: 600x600dpi

MEMORY: 8MB

SPEED: 12ppm

INTERFACES: USB

PAGES PER MONTH: 5,000

PAPER TRAYS: 150-sheet A4

OPTIONS:

Recommended minimum in grey

1 Prices for A4 laser printers with specs such as those above start at around £70. These models are fine for users who print less than one packet (500 pages) of paper a month. Look for good print quality, flexible drivers and running costs of below 2p per page. It should ideally hold paper clean and flat in a horizontal tray and allow manual feeding of headed paper and envelopes with no creasing.

2 You must spend more for a printer with the build quality and speed to cope with a heavy workload. Heavy users or small workgroups need up to 25 pages per minute (ppm), and whole departments need even more. Bulk printing demands costs of 1p per page or less.

3 Colour lasers are now available for less than £200, but at this price you'll get a three-pass model that will print colour far slower than mono. If colour speed is important, consider spending £400 or more to get a single-pass model.

4 Support for a printer language such as Printer Control Language (PCL) 6 or PostScript 3 means you can use the printer with any computer and even some PDAs.

5 Not all lasers print graphics well, but a 1,200dpi resolution helps. Colour lasers can print high-quality graphics, but should have at least 32MB of memory.

6 A network adaptor allows you to connect a printer to an Ethernet network, so all the network users can print to it directly. Smaller groups can use a PC to host and share any printer using Windows' File and Print sharing wizard.

7 Duplex printing is an increasingly affordable option and lets you print on both sides of a sheet of paper automatically. A scanner/fax unit turns your printer into a multifunction peripheral. Large groups should get multiple paper trays to deal with headed paper and other stationery.

Also consider...

HP DeskJet 5940

★★★★★
£57 inc VAT


A metal lid lends a touch of class to this mid-range inkjet, but the supplied 800-page black cartridge makes it incredibly good value. It's also very fast, reaching 20ppm in our draft text test. Low mono running costs of 2.2p per page helped it eclipse the competition in our recent inkjet *Labs* test.



INKJET PRINTER Four-colour inkjet, 4,800x1,200dpi maximum resolution, USB and PictBridge USB interfaces PART CODE C9017B SUPPLIER www.amazon.co.uk DETAILS www.hp.co.uk
✓ Very fast and quiet ✗ No upgrades available
FULL REVIEW Dec 2005

HP Photosmart 3210

★★★★★
£181 inc VAT


This MFP has everything you need to tackle creative projects. It produces high-quality, cheap prints quickly on plain or photo paper. The scanner has a high resolution and can capture film, although it does a better job with reflective originals.



MULTIFUNCTION PERIPHERAL 4,800x1,200dpi print resolution, 800x4,800dpi scan resolution, USB Hi-Speed PictBridge USB and 10/100 Ethernet interfaces PART CODE Q5843B SUPPLIER www.savastore.com DETAILS www.hp.co.uk ✓ Good value ✗ No fax FULL REVIEW Feb 2006